

## Childbirth in Germany and Nigeria Compared

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### ABSTRACT

**Background:** A look at childbirth processes in both countries may lead to understanding of the differences between them and may perhaps open up new arrears of research in human reproduction.

The objective of this paper is to compare some childbirth parameters in Nigerians and Germans and to adduce possible reasons for the differences.

**Method:** This is prospective study using data collected from 1055 consecutive deliveries that took place in Nigeria which was analyzed and compared with that of 56690 deliveries that took place in the German state of Hesse.

**Results:** Preterm labor was more common among Nigerians (12.1%) than in Germans (6.7%). There is no significant difference in the day and time of birth in the two countries ( $p > 0.05$ ). Precipitate labor occurred in 12.5% of Germans, as against none in Nigerians. Within 30 minutes, more than 90% of women in both countries complete the second stage of labor.

Doctors attend to more deliveries in Germany (99.3%), as against 63.1% in Nigeria. Episiotomy was performed in 71% of Germans as against 49% Nigerians. Primary cesarean section rate in Germany was 8.5% and in Nigeria 5.6%. Retained placenta was more common in Germans (2.5%) than in Nigerians (1%). Sepsis was more common in Nigerians (1.3%) than in Germans (0.0%). Blood loss greater than 1000ml was more common in Nigerians (2.9%) than in Germans (0.6%). Within 24 hours of delivery 74.8% of Nigerians leave hospital as against 4.0% of Germans.

**Conclusion:** It would appear that biological and socio-economic factors play differential roles in the final process of childbirth in different populations while meteorological cum cosmic factors appear to exact the same influence in the two populations.

**KEYWORDS:** Childbirth, Germany, Nigeria.

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### INTRODUCTION

Childbirth has since times of old been an event that evokes celebration and gift presentation as documented in the Holy bible. The Holy Bible has also described various issues of reproductive health including also the processes of childbirth in mankind<sup>1,2</sup>

Maternity care outcome in developing countries like Nigeria is still very poor when compared to that from developed countries like Germany.

Kuenzel *et al*<sup>3</sup>; and Onwuhafua and Kuenzel<sup>4</sup> in earlier studies have shown better outcome of obstetric health indices in Germans over Nigerians based on their study of socio-demographic and anamnestic characteristics of the two populations.

A look at childbirth processes in both countries may lead to understanding of the differences between them and may perhaps open up new arrears of research in human reproduction.

### MATERIALS AND METHODS

This study is based on data collected using the Perinatal survey sheet of the Hesse Perinatal Study Group. The period of study was from 1<sup>st</sup> January, 1990 to 31<sup>st</sup> August, 1990 for Nigeria (Ahmadu Bello University Teaching Hospital, Kaduna) and from 1<sup>st</sup> January, 1990 to 31<sup>st</sup> December, 1990 for Germany (The State of Hesse). During the periods of study, there were 1055 and 56690 deliveries in Nigeria and Germany respectively. Information collected on each woman included gestational age, Cervical dilatation on admission, Day and Time of birth, duration of labour, categories of professionals present during birth, the practice of episiotomy, modes of delivery, Maternal morbid conditions, and number of days spent in hospital after birth. Data analysis was performed at the Justus-Liebig University Department of Obstetrics and Gynecology, Giessen, Germany.

### RESULTS

Preterm labor was more common among Nigerians (6.1%) than in Germans (3.4%). Incidence of prolonged pregnancy was not different in both countries. Maternity records were less likely to indicate gestational ages of fetuses in Nigeria (5.0%) than in Germany (2.2%). Table I.

Germans report earlier in labor than Nigerians. At 2cm cervical dilatation, 59.1 % ( 32523) would have reported compared to 9.9 % ( 105) of Nigerians; 13.4% of Nigerians reporting in second stage compared to 1.5% of Germans. Table II.

In less than 12 hours of spontaneous rupture of membranes, 71,3% of Germans enter established

labor compared to 28.9% of Nigerians. Prolonged premature rupture of membranes occurs in 52.5% of Nigerians compared to 13.4% of Germans. Table III.

Day and time of birth was the same for both countries. Tuesday was the day with greatest percentages of deliveries, in Nigeria, 169(15.7%) and in Germany, 8707(15.2%). Maternity records in both countries always indicated day and time of delivery Tables IV and V.

Incidence of precipitate labor in Germany was 12.5%, as against 0.0% in Nigeria within 12 hours of starting labor 94.3% deliver in Germany compared to 37.8% in Nigeria. Within 18 hours, more than 90% of women in both countries would have delivered Table VI.

In all, Germans were faster in labor than Nigerians. In over 80% of women in both countries, the duration of second stage is within 20 minutes. Only 0.5% of Nigerians and 9.3% of Germans have the second stage prolonged for more than 30 minutes. Table VII.

Midwives attended to deliveries in over 98% of cases in both countries; Physicians attended to 63.3% and 99.3% of deliveries in Nigeria and Germany respectively. Only in 0.4% and 10.3% of deliveries in Nigeria and Germany respectively that are attended to by pediatricians. Table VIII.

Seventy one percent 32792(71%) of Germans and 450(49%) of Nigerians had episiotomy during delivery. Table IX.

Eighty eight percent (912) of Nigerians and 76.1% (42601) of Germans had normal vaginal delivery. Primary cesarean section rate in Germany was 8.5%, (4743) and 5.6 % ( 58) in Nigeria. Repeat cesarean section rate in Germany was 8.3% and 4.7% in Nigeria. Vacuum assisted delivery rate was 4.7 % ( 2606) in Germany and 0.6 % (6) in Nigeria. Vaginal forceps delivery rate was 2.3% in Germany and 0.3% in Nigeria. Table X.

Retained placenta occurred in 2.5% of Germans and in 1% of Nigerians. Third degree perineal tear, was more common in Germans (1.3%) than in Nigerians (0.1%). Fever was more common in Nigerians (2.8%) than in Germans (0.9%). Sepsis was more common in Nigerians (1.3%) than in Germans (0.0%). Postpartum hemorrhage was more common in Nigerians (2.9%), than in Germans (0.6%) Table XI.

Germans spend longer periods in hospital following deliveries. About 75% of Nigerian women went home on the day of delivery, while only 4% of Germans did so. Table XII.

**Table I. Estimated Gestational Age at Reporting for Labor**

Gestational Age in Weeks	Nigeria Nr=1055	Germany Nr=56690	P-Value
< = 31	15 1.4%	536 0.9%	>0.05
32-36	113 10.7%	3273 5.8%	<0.01
37-41	845 80.1%	50333 88.8%	<0.01
42&>	29 2.7%	1292 2.3%	>0.05
Not indicated	53 5.0%	1256 2.2%	<0.01

\*(p<0.01= significant)

**Table II. Cervical Dilatation on Admission**

Cervical dilatation (cm)	NIGERIA Nr= 1055	GERMANY Nr =56690
0	12 (1.1%)	3928 (6.9)
1-2	93 (8.8%)	29595 (52.2%)
3-4	283 (26.8%)	12687 (22.4%)
5-6	238 (22.6%)	4274 (7.5%)
7-9	238 (22.6%)	2584 (4.6%)
10	141 (13.4%)	828 (1.5%)
Not Indicated	50 (4.7%)	2794 (4.9%)

**Table III. Time from Spontaneous Rupture of Membranes to Established Labor**

Duration in hours	NIGERIA Nr (%)	GERMANY Nr (%)
Duration not known	11 (12.2%)	235(2.3%)
< / = 12 hours	15(16.7%)	6931 (69.0%)
13-24hours	14(15.6%)	1536 (15.3%)
25-48hours	24(26.7%)	869 (8.7%)
Above 48 hours	25(25.8%)	469 (4.7%)
<b>Total</b>	<b>89(100%)</b>	<b>10040(100%)</b>

**Table IV. Day of Birth**

Day of the week	NIGERIA *Nr=1075 %	GERMANY *Nr=57394 %	P-Value
Monday	130 12.1 169	8184 14.3 8707	>0.01
Tuesday	15.7 145	5.2 8615	>0.05
Wednesday	13.5 154	15.0 8551	>0.05
Thursday	14.3 158	14.9 8551	>0.05
Friday	14.7 156	14.9 7635	>0.05
Saturday	14.5 163	13.3 7151	>0.05
Sunday	15.2	12.5	>0.01

(P<0.01= significant)  
\* Number of babies

**Table V. Time of Birth**

Time of Birth(hours)	NIGERIA *Nr=1075 %	GERMANY *Nr=57394 %	P-Value
0600<1000	164 15.3 222	10135 17.7 11956	>0.01
1000<1400	20.7 194	20.8 10181	>0.05
1400<1800	18.0 184	17.7 8854	>0.05
1800<2200	17.1 153	15.4 8216	>0.05
2200<0200	14.2 158	14.3 8047	>0.05
0200<0600	14.7	14.0	>0.05

(P<0.01= significant)  
\*Number of babies

**Table VI. Duration of Labour**

Duration in hours	NIGERIA *Nr=946 %	GERMANY *Nr=46927 %	P-Value
1-2	0 0.0 81	5848 12.5 25372	<0.01
3-6	8.6 276	54.1 13021	<0.01
7-12	29.2 36	27.7 1590	>0.05
13-18	3.8 18	3.4 945	>0.05
19&>	0.8 545	2.0 151	>0.05
Not known	57.6	0.3	<0.01

(P<0.01=significant)  
\*Number of vaginal deliveries

**Table VII. Duration of Second Stage of Labour**

Duration (minutes)	1-10	11-20	21-30	>30	Not indicated
NIGERIA					
*Nr=946	484	281	34	5	142
%	51.2%	29.7%	3.6%	0.5%	15%
GERMANY					
*Nr=46927	26092	2448	3797	4342	248
%	55.6%	26.5%	8.1%	9.3%	0.5%

P>0.01=not significant

\*Number of vaginal deliveries

**Table VIII. Presence of Categories of Attendants during of the Birth Process**

Attendant	NIGERIA * Nr=1055 %	GERMANY *Nr=56690 %	P-Value
Midwife	1040 98.6	56333 99.4	>0.01
Obstetrician	668 63.1	56276 99.3	<0.01
Pediatrician	4 0.4	5829 10.3	<0.01

P<0.01=significant  
\*Number of deliveries

**Table XI. The Practice of Episiotomy**

NIGERIA	GERMANY	P-Value
*Nr=946	*Nr=46927	
450	32792	
(49.0%)	(71.0%)	<0.01

P<0.01=significant  
\*Number of vaginal deliveries

**Table X. Mode/Method of Delivery**

Mode /Method	NIGERIA Nr=1036 Singlebirths %	GERMANY Nr=56003 Singlebirths %	P-Value
Normal (Vaginal)	912 88.0	42601 76.1	<0.01
Primary Caesarean section	58 5.6	4743 8.5	<0.01
Secondary caesarean section	49 4.7	4663 8.3	<0.01
Vacuum	6 0.6	2606 4.7	<0.01
Forceps	3 0.3	1263 2.3	<0.01
Not indicated /other methods	8 0.8	127 0.1	>0.01

P<0.01=significant

**Table XI. Maternal Morbidity**

Morbidity	NIGERIA Nr=1055	GERMANY Nr=56690	P-Value
Retained placenta	11 1.0%	1400 2.5%	<0.01
Third degree	1 0.1	721 1.5	<0.01
Perineal tear	30 2.8%	508 0.9	<0.01
Fever	14 1.3%	22 0.0%	<0.01
Sepsis	31 2.9%	355 0.6%	<0.01
Blood loss > 1000ml	28 2.7%	651 0.9%	<0.01
Poor wound healing	0 0.0%	65 0.1%	<0.01
Deep vein thrombosis/embolism			<0.01

P<0.01= significant

**Table XII. Days Spent in Hospital**

Nr of days	NIGERIA *Nr=1055 %	GERMANY *Nr=56690 %	P-Value
0-1	788 74.8	2246 4.0	<0.01
2-6	123 11.7	38433 68.1	<0.01
7-12	123 11.7	14086 24.9	<0.01
13-18	14 1.3	1431 2.5	<0.01
19+	6 0.6	269 0.5	>0.01

\*Number of deliveries

P<0.01=significant

	MEDIAN	ARITHMETIC AVERAGE
NIGERIA	1.6	2.3
GERMANY	6.1	6.2

**DISCUSSION**

Preterm labour is more common among Nigerians than Germans. It can be due to a variety of situations but the major impact of this is that it is a major contributor of perinatal death and disability<sup>5</sup>; unfortunately however the forces driving the onset of labour remain largely uncertain, but stress peptides like placental corticotrophin releasing hormone (CRH) and urocortin appear to be major players in the complicated molecular processes according to Hillhouse<sup>6</sup> and Grammatopoulos<sup>7</sup>. If this is so then it is clear that Germans should have less of preterm births, as was found in this study. Furthermore, if truly it comes to be that Di (2-ethylhexyl) Phthalate (DEHP)- a chemical of necessity in the production of plastic bags- is implicated in the initiation of early labour as postulated by Latini et al<sup>8</sup> then we have a problem in Nigeria. There has been uncontrolled and indiscriminate production and litter of plastic bags in most cities of Nigeria with the introduction of the so called Poverty alleviation /Economic empowerment programs. The work of Ianis<sup>9</sup> has dealt sufficiently with issues involved here.

The poor obstetric performance of Nigerians, are, as a result of various factors which are largely

preventable. The uninformed traditional pressure to achieve vaginal delivery and also the socio-cultural demand to deliver at home with the so called TBAs (Traditional birth attendants) is manifest in this study. It is often when complications occur that the Nigerian then returns to hospital in a poor and severely degraded clinical state as such. What is it that makes the Nigerian women continue to run away from government Clinics? It would seem that most of the government facilities in Nigeria are degraded in the context of all the elements of quality of care as against the sophistication of Germany and their often paid- for services, courtesy of a well grounded people - oriented social security system as alluded to by Onwuhafua and Kuenzel<sup>4</sup>.

That Germans go into established labor earlier than Nigerians following spontaneous rupture of membranes perhaps may be attributable to the quick resort to induction of labor or to specific trigger factors for labor that is better and earlier expressed in the Germans! The factors responsible for spontaneous initiation of labor is yet to be fully understood though.

The finding of a shorter labor in Germans compared to Nigerians was a chance finding. However time of onset of labor may be difficult to remember by individual parturients with precision and therefore duration could be difficult to ascertain. What is known is that duration of labor is related to the intensity of uterine contractions and compliance of the cervix among other factors. The better socio-biological standing of Germans is likely to be expressed at the myometrial level by good morpho-functional development, thereby improved intensity of uterine contractions; perhaps also the Germans have been endowed genetically with lower concentration of cervical hydroxyproline according to Uldjberg *et al*<sup>10</sup>, which confers easier malleability of the cervix when subjected to stress as during labor.

Moreover the inaccuracies in cervical dilatation assessment has been highlighted by Letic.<sup>11</sup>

It would appear also that the 30 minutes assigned of old to second stage is not too far from reality, since most women would have completed the second stage by then, as was the case in this study.

Interestingly, day and time of birth is similar in both countries. What may be responsible for this is certainly not very clear. Cosmic influence on man and birth processes we hope can be better appreciated and studied at such a time when man would have conquered space and childbirth becomes practicable in outer space and other planets. It will really be interesting if the finding of this day/time semblance can be replicated and also even in other mammalian creatures in both countries.

It is observed that highest number of births take place between 10.00 hours and 18.00 hours. This certainly will be of great interest to labor suite managers, especially with regards to balancing activity and number of service providers on duty at various periods of the day.

The selective use of episiotomy in the delivery process has been advocated by many, such as Webb and Culhane<sup>12</sup> and van den Bergh *et al*<sup>13</sup>. The finding of easier resort to this procedure in Germany probably reflects the findings of Goldberg *et al*<sup>14</sup> reporting from the USA.

With regards to modes of delivery, the German school appears to be more interventionist than the Nigerian. The incidence of caesarean section, both primary and secondary are more, while the use of instruments to assist vaginal delivery are yet more common in Germany. The aversion to caesarean section by the Nigerian woman expressed by her determination to achieve vaginal delivery at all cost, irrespective of contraindication, a consequent of the high incidence of ruptured uterus as reported by from Nigeria<sup>15</sup> could partially explain the low rate of cesarean section among Nigerian women.

Rising cesarean rate is becoming trendy in most of Europe, and one cannot be too sure of the role of fear of litigation or generally the finding that neurological performance of babies especially the preterm delivered as such are said to be better<sup>16</sup>. Furthermore, it was not unusual to find most instruments for assisted vaginal delivery degraded in the hospital during the era of SAP (Structural Adjustment Program), when this study was done. With this scenario imposed by the economic hardship of the time, it is understandable that residents would have lost some skill due to lack of practice. This should be of great concern to trainers since both the vacuum and forceps remain beautiful pieces of the trade, if used correctly.

The 3<sup>rd</sup> stage of labor and after is often complicated by PPH and retained placenta. Where active management of labor is practiced, the incidence of PPH is expected to be low<sup>17</sup>.

The finding of a higher incidence of retained placenta in Germans is another surprise finding. Could it be that there is a genetic basis for this, that makes the placental villi have a deeper penetration in Germans? A histological study in both populations will probably define this supposition.

The lower incidence of PPH among Germans could be explained by, the practice of active management of labor, the lesser number of at risk population, and perhaps better biological and economic endowment

they enjoy<sup>4</sup>, all adding up to better uterine muscle development and consequent better strength for contraction/retraction activities.

The finding of early discharge of Nigerians following delivery, could be multifactorial, ranging from cultural practices, and some missing elements of quality of care that make hospital environment probably also unpleasant; the issue of cost of admission is worth stressing though. Early discharge has been associated with both maternal and infant hazards as has been discussed by Liu *et al*<sup>18</sup>, Martel,<sup>19</sup> Margolis *et al*,<sup>20</sup> and Scrivens and Summers<sup>21</sup>.

Interestingly, Pediatricians attend to few deliveries in both countries. However the reasons for this poor attendance differ for both countries. In Nigeria, they are very few pediatricians, while in Germany, the development of Maternal - Fetal medicine as a subspecialty makes it, in most cases unnecessary for the pediatricians to attend since most residents in such units have acquired considerable skill sufficient for *at delivery* needs.

It is apparent from this study that indeed, the final stage in the complex process of human reproduction is under both biological and environmental control. There is the need for continued investment into research in human reproduction especially with regards to cosmic influence. With the successful launching of the spacecraft Discovery in July 2005, the stage is now more than ever set for such research.

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